

# The Arrow

Department of Aeronautical Engineering Newsletter

2016-17 odd semester

Volume 2 issue 6



**KUMARAGURU**  
college of technology  
character is life

## Character is Life

- Arutselvar N.Mahalingam



Mou signed with Sree Sai Innovation technologies

KOSMORENA'16 from SEDS club

Aircraft design contest

Career day

### *HoD's Message:*

*It is my pleasure to inform that the department has witnessed some of the finest events this academic year. The benchmark event which is worth mentioning is the MOU signed by the department with Sree Sai Aerotech Innovations private limited. Adding to that Alumni interactions, Industry visit and industry personnel visit made it a fine odd semester filled with variety of events. Student participation has improved considerably compared to previous years. I am looking forward to*



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## Note from the editors

Research collaboration is essential for engineering as solutions so often involve the successful integration of technical, industrial, regulatory and social systems. Successful industrial integration happened this semester with an industry MOU which you can read it in the 8th page. The department is proud in honouring the vision of missile man Dr. APJ Abdul kalam through a design contest which can be read in 3rd page. Adding to the usual class room teaching of the courses , many guest lectures were conducted to improve the content delivery. Industry persons were invited to share their insights with the student community to bridge the industry institute gap. Further the research activities undertaken by our faculty members are listed in a separate page. Alumni who are the essential support of the department have also visited the department and shared their valuable experience.

## Editorial Committee

### Editor

Mr.J. Darshan kumar, Assistant Professor

### Student Associate editors

1. Ms. R. Sathya prabha
2. Mr. U. Raja naga pandiyan

# AIRCRAFT DESIGN CONTEST

HONOURING DR.APJ ABDUL KALAM



Aeronautical Engineering Department of KCT organized second edition of Aircraft Design contest “KCT Aircraft Design Contest 2016 (KCTADC 2016)” on Dr APJ Kalam’s birthday, 15th October 2016 as a Tribute to his contribution to Indian Aeronautical Industry. Dr APJ Kalam had “Vision 2020 for passenger aircraft”. It mainly focuses on fulfilling the need of Indian civil aviation requirement by indigenous design. To realize his dream and to take it to younger generation this contest is being conducted at KCT.

This Design contest was for Aeronautical Engineering students to create awareness about the civil aircraft requirements for the country, performing design calculations, using design tools, preparing the design report, making an effective presentation of their design and marketing the aircraft for the civil aviation industry and for bringing out their innovative and creative technical skills.

The chief guests / jury who felicitated the occasion are Mr. CU Hari , Chief Consultant (Micro Aerial Systems) Centre for Aerospace Research, MIT Chennai, Anna University, (Former Director Aeronautics, DRDO Head quarters ,New Delhi) and Mr. R.V. Ramkumar, Scientist, CABS, DRDO, Bangalore.

It is the bench make event of the department conducted for the vision of Dr. APJ Abdul kalam. This winner and runners of this competition are the Manipal Institute of Technology, Mangalore and Hindusthan college of engineering and technology, Coimbatore respectively.



## AEROMODELLING GUEST LECTURE

Mr. Srikanth Gupta, Senior Aeromodeller visited the campus on 11<sup>th</sup> July 2016 to address the second and third year students about the importance of aero modeling.

This event was co – ordinated by the aero modeling club Faculty in charge Mr.J.,Darshan kumar. The main objective of this Guest lecture to provide information about the Aeromodelling for Aeronautical students. The students were imparted with the emphasis on aero modeling and flying.

Principal Dr.R.S Kumar gave the welcome address and presented the chief guest with a memento. The lecture was primarily focused in bringing the importance of aeromodelling to the students. The chief guest brought in his 30 odd years of experience to showcase some of his worth full models and its design to bring the student's attention towards the topic. The event was well received by the students and Mr. J. Darshan kumar faculty gave the vote of thanks.



## FACULTY INDUSTRY VISIT

Mr.Pattabiraman, CEO of the company gave introduction about Sree Sai Aerotech Innovations Private Limited. we discussed about few of their ongoing projects and got in details about the companies background. Followed by the discussion Mr Venkatesh introduced his staff members of the company and briefed us about their R&D set up.

After the visit we discussed few points on Industry Academia terms and conditions which highlighted about internships, placements and industrial live projects.

During the discussion Mr. N Shekar, President of AIDAT visited the company and gave the information about the development initiative taken from tamil nadu government in aerospace and UAV field.

Faculty members Mr.J.Darshan kumar and Mr.P S Prem kumar were the ones who visited the industry and brought a potential MOU opportunity for the department

## Guest lecture on Aircraft performance by NAL scientist Retd

Prof V Kanagarajan, Scientist Retd., NAL, Bangalore visited the department on 26th Sep 2016 to give a guest lecture on Applications of aircraft performance in view of aircraft design and wind tunnel testing. The event was organized by Mr. Premkumar P S. Session started with welcome address by



Mr. Premkumar P S, Aero Department and guest introduction by Ms. Danya Lincy, Third year Aero student. Speaker started with introduction about Aircraft Performance and continued the lecture with the application of Aircraft performance in design and wind tunnel testing.

The third year students who were attending Aircraft performance course were given this lecture and they gained the course perspective from a wind tunnel and design perspective. The speaker shared his real time working experience in various aircraft design process at NAL. He added a new dimension to the students in the subject.

The Students were enthusiastic enough to have meaningful conversations and clarified their queries from the retired NAL scientist.

## ALUMNI VISIT TO THE DEPARTMENT

Mr. Naveen Kumar, Alumni, Associate Software Engineer, Accenture visited the department on 6<sup>th</sup> July 2016 and gave a Guest lecture on “Opportunities for Aeronautical students in IT sector”.



Mr. Naveen Kumar addressing the students in the department classroom

This lecture was aimed at the audience from second and third year students. The guest clarified many of the misconceptions and doubts both regarding the IT industry jobs. He invoked the working potential for an aeronautical engineer in an IT industry. As an Alumni he exactly knows the pitch of his juniors and delivered the lecture up to that. He gave various ways to prepare the students themselves for the IT industry,



P3 company head addressing the students

The members from the company gave a lecture to the final year students about the prospects of the tech pub industry and their own company. The students gained the knowledge about the technical publication industry, an added opportunity and a work potential that is available in the industry.

## P3 Company Personnel visit

A team from P3 group, a tech pub company, Bangalore visited KCT for training come placement activity on 15<sup>th</sup> Sep 2016. Recently the tech pub industry is growing substantially and the visit of the P3 group to the department would set the students in a right job oriented path.

# KOSMORENA'16

## KCT SPACE WEEK 2016



As part of the SEDS club's (Students for the Exploration and Development of Space) annual grand event KOSMORENA'16, both the college students and the school students were given various workshops and conducted space related competitions to increase the curiosity among the students community on space.

The event was conducted on 05.10.2016. The chief guests are Mr.T.Subramanya Ganesh, Deputy General Manager, ISTRAC-ISRO, Bangalore and Ms. P.Vasugi, Scientist/ Engineer-SE, ISTRAC-ISRO, Bangalore. Workshops were conducted to design and build mini rockets and satellites. Response from colleges and schools were very encouraging.

We had around 150 students from 15 different colleges all around Tamilnadu. Also around 380 students from different schools in and around Coimbatore. We also conducted the Satellite making Workshop (CANSAT) first time in this region for college students which was participated by 60 students including KCT & other college students.

- Day 1 College Student Events
- Day 2 School Students Event



## The Story of SARAS Aircraft wing Development: Design, Optimisation, Analysis, free vibration analysis and structural testing of both Metal & Composite Wings

This is one such key event from the department where personnel from India's leading aeronautical research laboratory NAL was called and arranged a lecture on the indigenously developed India's regional aircraft



SARAS on 3rd April 2017

.The seminar was given on the topic "The Story of SARAS Aircraft wing Development: Design, Optimisation, Analysis, free vibration analysis and structural testing of both Metal & Composite Wings" The Chief guest for the occasion is Dr.Sridhara Murthy from NAL Bangalore.

The main objective of this Seminar is to provide basic knowledge about vibration analysis on composite material for Aeronautical students.

The basic concepts of vibration and structural analysis have been explained by The Seminar has been explained about the Story of SARAS Aircraft wing Development with strong domain knowledge and vast experience. The session was attended by the third year and final year students of the department.

## Aeronautical students Association inauguration

Mr. The department witnessed the Aeronautical students Association inauguration on 15th Sep 2016 with the P3 company's Business Development head Mr. ANURAG SHARMA as chief guest. The Department Association president Mr. Rajavarman gave a speech on all his



Mr. ANURAG SHARMA Business Development of P3 company addressing the gathering

plans towards the DA activities. Various stake holders of the DA were chosen and announced during the session. Students from all the three years attended the event with complete spirit. The rest of the session is taken over by the various secretaries of the department association to deliver their plans for the upcoming years.



Mr Balaji Iilongovan addressing the students

aircrafts systems and instrumentation. He shared a set of skill set that would be vital for the students to fetch a job for themselves. Mr.J.Darshan Kumar coordinated the event .

## Mechatronics Alumni visit

Mr Balaji Iilongovan, 2009 Mechatronics passed out from KCT, working in Zodiac Aerospace, UK gave a Seminar on "Road to being an efficient engineer" on 6th Sep 2016 at the seminar hall. The students attended were from both the second and third year. Being a Mechatronics engineer by profession, he shared his experience at the aerospace company he is currently working. The company primarily concentrates on



Meeting with the Head of Sree Sai technologies and KCT top management



Sri Sai tech Managing director Mr. Sai Pattabiram signing the MOU



Sri Sai tech Managing director Mr. Sai Pattabiram and Joint Correspondent Shri.Shankar Vanavarayar exchanging MOU



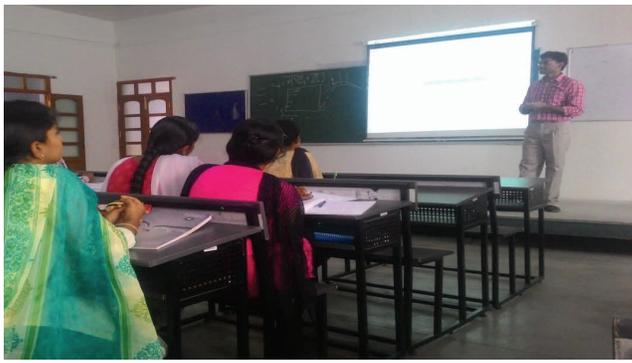
Discussion between Sri Sai tech company personnel and KCT top management ,Principal, faculty members , students during the signing of MOU

## MOU with Sree Sai Aerotech Innovations private limited

The department is extremely happy to sign the MOU between KCT and Sree Sai Aerotech Innovations private limited, Chennai on establishing the centre of excellence on unmanned aerial vehicles. The event was attended by principal Dr.R.S.Kumar and our Joint Correspondent Shri. Shankar Vanavarayar.

Sree Sai Aerotech Innovations Private Limited was incorporated in the year 2005 at Chennai, Tamil Nadu (India). It holds specialization in Manufacturing of an extensive array of technically advanced products like GPS Vehicle Tracking System. The company is also a Manufacturer of various kind of GPS Vehicle Tracking System.

Sree Sai technologies particularly working on autopilots for the drones. This partnership would help the students and faculty members to get familiarize with the code necessary for the drone auto pilot development. It was accepted in the meeting that KCT would provide all the necessary support to Sree Sai Aerotech Innovations to set up a centre of excellence in drone design and testing at the KCT campus to boost innovations among the students.



Lecture delivered by Mr.K.N.Anbuselvan

### Guest lecture on Navier stokes equation and its applications

A guest lecture for the final year students was arranged on 24th Oct 2016. The chief guest being Mr.K.N.Anbuselvan from IISc, Bangalore gave his insights on Navier Stokes equations and its applications in the real world. He also connected the applications in CFD also. A crisp lecture gave by the guest was well received by the students.



Mr.P.S Prem kumar presented paper at Royal Aeronautical society , UK

### Faculty Paper presentation overseas

Mr.P.S Prem kumar, a CFD specialist presented his research works at the prestigious Royal Aeronautical society's 2016 Applied Aerodynamics Conference on Evolution & innovation continues - the next 150 Years of concepts, design and operations. The works he presented were Computation of Aerodynamic Gust Response using the Open-Source SU2 Code and Experimental and Computational Studies on Propeller Flow Field Characteristics.



Department faculty members Mr.M.Senthil kumar and Mr.Arul prakesh have visited the Ind lab fabrication facility in Bangalore to see the work in progress for the gas turbine test rig that is to be supplied to the department.

### List of papers presented at the conferences during 2016-17 odd semester

1. Mr.S.Senthil kumar presented his research work in International conference on emerging trends in engineering held at NMAM institute of technology udipi, Karnataka on 12/5/2016
2. Mr.M.Senthil kumar and Mr.R.Arul prakash presented their research work in International conference on nanoscience and nano technology for energy applications held at sathyabama university Chennai on 27/6/2016
3. Mr.R.Vijayanandh presented his research work in International conference on advanced materials and manufacturing applications held at Amrita school of engineering , Bangalore
4. Mr.G.Rajkumar presented his research work in international conference on advances in computational intelligence in communication held at Pondicherry engineering college, Pondicherry.
5. Ms.Dharani priya final year student presented her research work collaborating with the faculty Mr.M.Senthilkumar presented a paper in International conference on Nano science and Nano technology at Vellore institute of technology , Vellore

## INTERNATIONAL SEMINAR ON ADVANCED FLUID RESEARCH & TESTING

Aeronautical and Automobile Engineering departments of KCT conducted "International Seminar on Advanced Fluid Research & Testing" on 13th July 2016.

Convener of the seminar, Mr. P.S. Premkumar, AP(SRG), Aeronautical Engineering welcomed the guest speakers, delegates and invitees. The seminar was inaugurated by Dr. R. S. Kumar, Principal, KCT with his energetic and enthusiastic speech about the significance of fluid research and work carried in ancient times of India depicted in epics. The eminent speakers of the seminar are Mr. Graeme Harris, Lecturer in Mechanical Engineering, ARA institute of Canterbury, Christchurch, New Zealand with research experience in designing flying cars and motorsports vehicle, CFD experts Mr. R. V. Ramkumar, Scientist, DRDO, CABS, Bangalore and Mr. Veera Manikandan, Senior CFD Analyst, Fiat Chrysler Automobile, Chennai.

Mr. Graeme Harris explained about the innovative Fluid Mechanics Teaching in New Zealand emphasizing "Seeing is Believing" and demonstrated the practical teaching methods.

Mr. Ramkumar highlighted how CFD applications are used in AEW&C aircraft design and simulation of Air to Air Refueling. Bringing out various open source CFD tools available, Mr. Veera Manikandan explained about the Advanced CFD Simulation using OpenFOAM with hands on training to the delegates.





**Department of Aeronautical Engineering**

**INSTITUTE VISION**

The vision of the college is to become a technical university of International Standards through continuous improvement.

**INSTITUTE MISSION**

Kumaraguru College of Technology (KCT) is committed to providing quality Education and Training in Engineering and Technology to prepare students for life and work equipping them to contribute to the technological, economic and social development of India. The College pursues excellence in providing training to develop a sense of professional responsibility, social and cultural awareness and set students on the path to leadership.

**DEPARTMENT VISION**

To attain excellence and global reputation in Aeronautical Engineering Education and Research.

**DEPARTMENT MISSION**

M1: The department is committed to provide quality education in Aeronautical Engineering to students to build their career and do quality research and thus contribute to the field of Aviation and Aerospace.

M2: The department aims to prepare students for their higher studies and research to contribute to the advanced technological needs of Aeronautical engineering.

M3: To encourage faculty to update their knowledge and teaching-learning process through continuous learning.

M4: To undertake inter-disciplinary research to contribute and support the industry.

**PROGRAM EDUCATIONAL OBJECTIVES (PEOS)**

The Program Educational Objectives (PEOs) of Aeronautical Engineering Undergraduate Program are to prepare the students:

I. To pursue a successful profession in leading organizations.

II. To pursue postgraduate degrees and conduct research at leading technological universities to contribute to the advancement in the field of Aviation and Aerospace industries.

III. Continue their professional development by utilizing educational and career building opportunities through their employer, educational institutions, or professional bodies.

## **PROGRAM OUTCOMES (POS)**

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice and systems.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commitment to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAM SPECIFIC OUTCOMES (PSOS):**

PSO1: Apply fundamental principles of Aerodynamics, Structures, Propulsion, Materials, and Avionics to provide solutions to aerospace and non-aerospace industrial problems.

PSO2: Use the software packages in the design, manufacturing, testing and maintenance of aeronautical and aerospace based components